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ABSTRACT

Social scientists have repeatedly demonstrated that individuals tend to underutilize base-rate information in favor of case-specific information in problems investigating subjective probability estimation. Despite the pervasiveness of this base-rate fallacy, little progress has been made in establishing a definitive explanation for its cause. This study attempted to demonstrate that the egocentric importance of case-specific information is an important determinant of case-information utilization. Undergraduates (N=32) were presented both base-rate and case-specific information and asked to report how important the case information was to them when deciding whether or not to enroll in courses described by the base and case information. As hypothesized, base and case information were utilized differently. "High Importance" case information was utilized more so than "Low Importance" case information, and a significant, positive correlation was found between how important the case information was to each subject and the degree to which subjects utilized the case information. The information's egocentric value contributed to the extent that the case-specific information was utilized. Supposedly "neutral" base-rate information, based on many students, decreased subjects' probabilities of enrolling in a course, while case-specific information increased students' probabilities of enrolling in a course. (ABL)

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Information Importance and the Base-Rate Fallacy

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Abstract

The "base-rate fallacy" is a commonly observed heuristic in the social sciences. Despite its pervasiveness, little progress has been made in establishing a definitive explanation for its cause. The present study attempted to demonstrate that the egocentric importance of case-specific information is an important determinant of case-information utilization. Thirty-two undergraduates were presented both base-rate and case-specific information and asked to report how important the case information was to them when deciding whether or not to enroll in courses described by the base and case information. As hypothesized, base and case information were utilized differently, "High Importance" case information was utilized more so than "Low Importance" case information, and a significant, positive correlation was found between how important the case information was to each subject and the degree to which subjects' utilized the case information.

Information Importance and the Base-Rate Fallacy

Social scientists have repeatedly demonstrated that individuals tend to underutilize base-rate information in favor of case-specific information in problems investigating subjective probability estimation. However, one question that remains largely unanswered is why do people commit this error?

Nisbett and Borgida (1975) suggested that base rates are underutilized because they are "pallid and abstract," whereas case-specific information is perceived to be more concrete and vivid. Nisbett and Ross (1980) suggested that three factors contribute to information vividness: (1) the emotional interest of the participant, (2) the information's concreteness, and (3) the information's temporal, spatial, and sensory proximity. However, isn't it possible that several pieces of case-specific information perceived to be equally vivid (as defined by the above factors) but different in some other regard might differentially affect base-rate utilization?

The Present Study

The present study suggests one factor influencing the utilization of case-specific information is the information's egocentric importance. Egocentric importance is how important the information is perceived to be by each individual. It is hypothesized that equally vivid (but differentially important) case information will be utilized differently, and that this difference can be explained by the egocentric value the information possesses for each individual. In the present investigation, students were

presented base-rate and case-specific information (either "Low" or "High" Importance case information) describing two proposed college courses and were asked to provide their probability of enrolling in each course. The hypotheses for this investigation are as follows:

(1) base-rate information will influence students' enrollment probabilities less than case-specific information,

(2) enrollment probability change due to "High Importance" case information will be greater than probability change due to "Low Importance" case information, and

(3) there will be a positive correlation between subjects' personal-importance ratings of the case-specific information and change in subjects' enrollment probabilities.

Method

Subjects

Subjects in a preliminary study were 40 undergraduates enrolled in an experimental psychology course. Subjects in the actual investigation were 32 undergraduate students at the University of Vermont. All subjects were volunteers and were provided the investigation's true purpose at its completion.

Procedure

A preliminary study was conducted to obtain a list of statements that were equally vivid but differentially important. Students in the pilot study rated 15 statements on both vividness and importance. Based on these ratings, six statements were selected that were shown to be equally vivid but differentially important (3 "High Importance" and 3 "Low Importance" statements).

This created the within-subjects variable "Case-Specific Information Importance."

In the main experiment, subjects were given two questionnaires (one at a time). Subjects were first asked to rate their interest in enrolling in either a Social Psychology or an Abnormal Psychology course (these queries were counterbalanced). Subjects were then given base-rate type statements based on input from previously enrolled students (e.g., "10 out of 20 students recommended the course") and allowed to adjust their enrollment probability. Subjects then randomly received either "Low Importance" (e.g., "I made a lot of friends through the course") or "High Importance" (e.g. "The course made me a more critical thinker") case-specific statements based on one student concerning the course and were again asked to provide the probability they would enroll in the course.

These steps were then repeated, allowing students to rate their interest in the other Psychology course (Abnormal or Social) with the only difference being the type of case-specific information subjects received. Subjects receiving High Importance case information in Trial 1 received Low Importance case information in Trial 2, and vice versa.

Results

Subjects made 12 responses during the entire experiment. These included:

A_1 = the initial enrollment probability for the Social(or Abnormal) course,
A_2 = the adjusted enrollment probability for the Social(or

Abnormal) course after the base-rate information,
A_3 = the final enrollment probability for the Social(or Abnormal) course after the "Low" or "High" case information,
B_1 = the initial enrollment probability for the Social(or Abnormal) course,
B_2 = the adjusted enrollment probability for the Social(or Abnormal) course after the base-rate information,
B_3 = the final enrollment probability for the Social(or Abnormal) course after the "Low" or "High" case information.

PL_1, PL_2, PL_3, = the personal importance ratings for the three Low Importance case-specific statements

PH_1, PH_2, PH_3 = the personal importance ratings for the three High Importance case-specific statements

Six dependent variables were computed from these 12 measures: (1) change in enrollment probability for a course due to base-rate information prior to the presentation of Low Importance case-specific information ($BR_{\Delta 1}$), (2) change in enrollment probability for a course due to base-rate information prior to High Importance case-specific information ($BR_{\Delta 2}$) (3) change in enrollment probability due to High Importance case-specific information ($CS_{\Delta HIGH}$), (4) change in enrollment probability due to Low Importance case-specific information ($CS_{\Delta LOW}$), (5) the average importance rating for the Low Importance case-specific statements (P_{LOW}) calculated as $(PL_1+PL_2+PL_3)/3$, and (6) the average importance rating for the High Importance case-specific statements (P_{HIGH}) calculated as $(PH_1+PH_2+PH_3)/3$. Three paired differences t-tests were conducted between: (1) $BR_{\Delta 1}$ and $CS_{\Delta LOW}$, (2) $BR_{\Delta 2}$ and $CS_{\Delta HIGH}$, and (3) $CS_{\Delta LOW}$ and $CS_{\Delta HIGH}$. Correlations between (1) P_{LOW} and $CS_{\Delta LOW}$ and (2) P_{HIGH} and $CS_{\Delta HIGH}$ were also conducted.

The mean $BR_{\Delta 1}$ (change due to base-rate statements prior to Low

Importance statements) was -1.86 and the mean $BR_{\Delta 2}$ (change due to base-rate statements prior to High Importance statements) was -1.45. The difference between these two means was not significant (p=.35), suggesting that neither set of base-rate information was more influential than the other. The mean change in enrollment probability due to Low Importance case information was .56 and the mean change in enrollment probability due to High Importance case information was 1.92.

A paired-difference t-test revealed that $CS_{\Delta LOW}$ ($\bar{x}$=.56) was significantly different than $BR_{\Delta 1}$ ($\bar{x}$=-1.86), $t(31)$=-4.23, p<.01. Similarly, a paired difference t-test revealed that $CS_{\Delta HIGH}$ ($\bar{x}$=1.92) was significantly different than $BR_{\Delta 2}$ ($\bar{x}$=-1.45), $t(31)$=-6.02, p<.01. These findings suggest that case information was indeed utilized differently than base-rate information. As predicted, a paired difference t-test revealed that $CS_{\Delta HIGH}$ ($\bar{x}$=1.92) was significantly greater than $CS_{\Delta LOW}$ ($\bar{x}$=.56), $t(31)$=-3.48, p<.01.

A Pearson Product-Moment Correlation analysis revealed a significant positive correlation between P_{LOW} and $CS_{\Delta LOW}$, r=.53, p<.01). A second correlation analysis revealed a significant positive correlation between P_{HIGH} and $CS_{\Delta HIGH}$, r=.62, p<.001. These positive correlations suggest that as the egocentric importance of the case information increases the change in enrollment probability increases as well (i.e., subjects are more likely to enroll in the course).

Discussion

The main findings of the present investigation included:

1.) the information's egocentric value contributed to the extent that the case-specific information was utilized. When the case-specific information was perceived to be of high importance, subjects used this information more so than less important case information, and

2.) supposedly "neutral" base-rate information, based on many students, decreased subjects' probabilities of enrolling in a course, while case-specific information (based on a former student's accounts) increased students' probabilities of enrolling in a course.

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